
VOICE OF
Valin Thorn
Partner Mgr.,Sierra Nevada Corp., Commercial Crew Pgm.

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00:00:01,636 --> 00:00:07,656
[Kyle Herring] Continuing on with our
Partner Manager interviews associated

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00:00:07,656 --> 00:00:09,686
with the Commercial Crew Program.

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00:00:10,246 --> 00:00:16,696
One of the unique opportunities was one of
the partners, Valin Thorn who is based here

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00:00:16,696 --> 00:00:20,856
at the Johnson Space Center;
he's actually co-located

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00:00:21,376 --> 00:00:26,906
with Sierra Nevada Corporation
out near Boulder, Colorado.

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00:00:27,316 --> 00:00:32,956
And we also had an opportunity earlier in
the week to talk to Valin about his role

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00:00:32,956 --> 00:00:36,666
as the Partner Manager for
Sierra Nevada Corporation.

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00:00:38,466 --> 00:00:43,956
Welcome, I'd like to welcome Valin Thorn who
is the Commercial Crew Program Partner Manager

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00:00:43,956 --> 00:00:47,986
for Sierra Nevada one of
the companies that's part

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00:00:47,986 --> 00:00:51,176
of the Commercial Crew Program
Space Act Agreement.

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00:00:51,176 --> 00:00:52,926
It's a pretty exciting time.

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00:00:53,106 --> 00:00:59,196
Valin is actually embedded with
Sierra Nevada out in Colorado.

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00:00:59,196 --> 00:01:01,516
Valin thanks a lot for joining us today.

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00:01:02,846 --> 00:01:03,786
[Valin Thorn] Hello Kyle and good morning.

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00:01:03,786 --> 00:01:04,716
I'm really glad to be here.

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00:01:05,336 --> 00:01:08,136
[Kyle] Well it's, you're kind of
an unusual situation of course.

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00:01:08,136 --> 00:01:10,246
You're based here at the Johnson Space Center.

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00:01:10,246 --> 00:01:16,306
But you're actually, at least as far as I can
tell, the only Partner Manager that's based

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00:01:17,216 --> 00:01:19,276
out in with the company like that.

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00:01:19,386 --> 00:01:25,986
That's got to be a unique situation probably
for you and even for Sierra Nevada, huh?

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00:01:27,286 --> 00:01:31,766
[Valin] Well it certainly is in the long history
of NASA's government industry partnerships.

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00:01:32,166 --> 00:01:37,716

Typically NASA will have people in
residence with our partners even when we're

23
00:01:37,716 --> 00:01:43,306
in a contract relationship and not a commercial
partnership we have had relationships like that.

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00:01:43,306 --> 00:01:48,026
So it's not completely unusual for
NASA to have this kind of arrangement.

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00:01:48,336 --> 00:01:52,326
I am the first for the Commercial Crew
Program to go in residence with a partner.

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00:01:52,996 --> 00:01:58,426
The thinking behind that is that with our
partners leading their development projects

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00:01:58,856 --> 00:02:03,716
to have some senior NASA management
there on location with the partner.

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00:02:03,966 --> 00:02:05,436
Provide some additional insight.

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00:02:05,436 --> 00:02:07,156
It improves communication.

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00:02:07,536 --> 00:02:11,646
You know, it allows me to kind of see on
a day-to-day level how things are working

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00:02:11,986 --> 00:02:15,066
with our partner and how our
people who are participating

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00:02:15,066 --> 00:02:18,136
in helping our partners how
effectively that's working.

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00:02:18,586 --> 00:02:18,766
[Kyle] Yeah.

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00:02:18,766 --> 00:02:22,436
It's probably; it's a pretty
interesting, interesting situation.

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00:02:22,436 --> 00:02:25,086
And we'll talk about that a little bit here.

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00:02:25,086 --> 00:02:31,636
But, you know, for everybody that's tuning
in talk a little bit about your career.

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00:02:31,636 --> 00:02:33,556
How did you even get involved in NASA?

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00:02:33,556 --> 00:02:34,586
How long have you been here?

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00:02:34,586 --> 00:02:37,826
And, you know, where did you go
to school, those types of things?

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00:02:38,336 --> 00:02:38,696
[Valin] Right.

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00:02:38,696 --> 00:02:40,506
I went to Arizona State University.

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00:02:40,506 --> 00:02:41,866
I grew up in Arizona mostly.

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00:02:42,306 --> 00:02:45,836
I studied Aeronautical Technology
and Engineering.

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00:02:46,246 --> 00:02:49,496
My first job was with the
space shuttle prime contractor.

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00:02:49,496 --> 00:02:52,986
That was Rockwell International
which is now part of Boeing.

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00:02:53,636 --> 00:02:59,066
And so within a few years, you know, even though
I'd mostly been studying atmospheric flight I

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00:02:59,066 --> 00:03:04,286
was basically teaching orbital mechanics
and space mission analysis and design.

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00:03:04,286 --> 00:03:07,686
And so you're always learning to get into
your job and everyday you're learning.

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00:03:07,686 --> 00:03:08,546
It never stops.

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00:03:08,886 --> 00:03:12,376
So I've been working in human
space flight ever since.

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00:03:12,776 --> 00:03:17,226
I spent eight years working the space shuttle
program and advanced programs for Rockwell.

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00:03:17,886 --> 00:03:24,586
I ended up working shuttle entry
guidance and performance and also ended

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00:03:24,586 --> 00:03:27,226
up leading teams planning
space shuttle missions.

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00:03:27,566 --> 00:03:34,426

So I worked a number of those before going
then to Grumman Aerospace for a few years

55
00:03:34,606 --> 00:03:36,366
to work the space station program.

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00:03:36,436 --> 00:03:37,966
And then I went over to NASA.

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00:03:37,966 --> 00:03:42,086
So in total I had about 15 years
working the space station program.

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00:03:42,526 --> 00:03:46,456
I ended up working as the manager of
Systems Engineering and Integration;

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00:03:46,456 --> 00:03:49,426
we call it the Viper team,
as well Strategic Planning

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00:03:49,426 --> 00:03:51,376
and Requirements which was the Saber team.

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00:03:51,846 --> 00:03:56,346
And in those roles we determined the
overall space station configuration,

62
00:03:56,706 --> 00:03:59,366
the assembly sequence and
integration with the space shuttle,

63
00:03:59,856 --> 00:04:05,406
integrated performance optimization with
logistics support like resupply for supplies

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00:04:05,406 --> 00:04:08,186
of the crew, as well as kind of
planning for getting the crews on board.

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00:04:08,886 --> 00:04:13,456
The last six years I've been working
NASA's Commercial Space Flight programs.

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00:04:13,456 --> 00:04:18,466
It began with the COTS projects with
SpaceX and Orbital Sciences and then

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00:04:18,466 --> 00:04:23,786
with the Commercial Crew Program
working with the Boeing, SpaceX again,

68
00:04:24,116 --> 00:04:26,536
Sierra Nevada Corporation
and several other partners.

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00:04:27,086 --> 00:04:30,406
So for the last year though, I've
been working with Sierra Nevada

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00:04:30,836 --> 00:04:33,166
out here in Colorado in residence.

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00:04:33,896 --> 00:04:36,066
Sierra Nevada is in Louisville, Colorado.

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00:04:36,436 --> 00:04:38,746
That's near Denver and near Boulder.

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00:04:39,336 --> 00:04:42,366
My wife also works for NASA.

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00:04:42,366 --> 00:04:47,266
She's come out here and she's working, she
works for the Program Scientist's Office

75
00:04:47,266 --> 00:04:48,936
for the International Space Station Program.

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00:04:48,936 --> 00:04:53,876
And there are some projects they have that are
very compatible with tele-working and so she's,

77
00:04:54,406 --> 00:04:58,866
she's here with me and working
with the space station program.

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00:04:58,866 --> 00:05:00,206
And it's been working very well.

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00:05:00,766 --> 00:05:02,436
[Kyle] Well that's, yeah, that sounds great.

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00:05:02,706 --> 00:05:08,866
So you kind of describe a little bit about
your role with Sierra Nevada being embedded

81
00:05:08,866 --> 00:05:13,076
with them, obviously operating
under the Space Act Agreement

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00:05:13,076 --> 00:05:14,856
that the program is under right now.

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00:05:14,856 --> 00:05:16,486
It's kind of a new way of doing business,

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00:05:16,526 --> 00:05:22,936
but how do you exactly integrate
yourself with a company like that?

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00:05:23,146 --> 00:05:24,886
[Valin] Well, you know, I don't
know if it's so much different

86
00:05:24,886 --> 00:05:28,106
than our previous government
industry partnerships.

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00:05:28,596 --> 00:05:33,276
Certainly, the way we've normally done
business in developing the space shuttle

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00:05:33,386 --> 00:05:37,516
and the Apollo programs NASA's very
much took the lead in the development,

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00:05:37,606 --> 00:05:43,376
it's still 85% in the effort was being
done by American industry with NASA's lead.

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00:05:43,376 --> 00:05:49,556
Now in this program NASA is helping several
companies develop commercial space lines.

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00:05:50,226 --> 00:05:54,826
The difference is the companies are
leading their own engineering development

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00:05:54,826 --> 00:05:55,946
with our assistance.

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00:05:56,286 --> 00:06:01,136
And the purpose behind that is to
allow different companies to innovate

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00:06:01,136 --> 00:06:04,466
in different ways and not to dictate
particular solutions to problems.

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00:06:04,876 --> 00:06:08,326
We're providing financial assistance,
we're providing technical assistance.

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00:06:08,746 --> 00:06:12,846
It's still very much a good close
partnership and we work closely together.

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00:06:13,196 --> 00:06:16,556
I wouldn't say that it's been
any more of a unique challenge.

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00:06:17,856 --> 00:06:22,786
Certainly for NASA as we, as we work in these
commercial partnerships it's a different,

99
00:06:23,136 --> 00:06:27,376
it's a different environment to
take more of an assisting partner,

100
00:06:27,646 --> 00:06:31,066
in kind of a consultant role
is a different model for NASA.

101
00:06:31,066 --> 00:06:34,786
So there's some transition for people to
get used to that kind of a relationship.

102
00:06:35,186 --> 00:06:37,636
But still it's very rewarding.

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00:06:37,936 --> 00:06:42,776
One of the advantages, is our commercial
partners tend to move faster than we do

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00:06:42,776 --> 00:06:46,656
with our larger, larger development
efforts that we've historically had.

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00:06:47,086 --> 00:06:51,126
And so then you also have several
different program concepts in development.

106
00:06:51,436 --> 00:06:55,076
So it's in many ways it's actually
more intellectually stimulating

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00:06:55,076 --> 00:06:56,946
for the NASA people who are helping.

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00:06:57,276 --> 00:06:59,486
They're contributing to several
different programs.

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00:07:00,166 --> 00:07:05,636
They move much faster and so in many
ways it's, makes it more rewarding.

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00:07:06,476 --> 00:07:10,586
[Kyle] Part of the structure,
as I understand it is, you know,

111
00:07:10,586 --> 00:07:15,406
the Space Act Agreement structure is, at
least with these companies, is, you know,

112
00:07:15,406 --> 00:07:21,206
based on milestones and that's kind of
different than of a contract relationship.

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00:07:21,206 --> 00:07:26,816
Can you kind of describe the structure of
those milestones like what's actually been done

114
00:07:26,816 --> 00:07:31,716
to date, and some of the milestones
that are upcoming relative to Sierra?

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00:07:32,686 --> 00:07:32,966
[Valin] Sure.

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00:07:32,966 --> 00:07:37,576
And really to begin to understand that people
have to know how we normally do business,

117
00:07:38,036 --> 00:07:40,626
which is in a contract structure

we call cost-plus.

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00:07:41,166 --> 00:07:46,436
And so our industry partners and
those contracts, cost-plus contracts,

119
00:07:47,186 --> 00:07:51,276
they do whatever work that is
required to get the job done

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00:07:51,276 --> 00:07:55,316
and they get a profit added on top of that.

121
00:07:55,636 --> 00:07:59,336
And so with that kind of an approach
pretty much everyone who is working

122
00:07:59,336 --> 00:08:02,496
for the company is charging their time
and that just gets billed to NASA.

123
00:08:03,216 --> 00:08:07,386
And so that relationship tends to
not always be the most efficient

124
00:08:07,386 --> 00:08:09,466
because sometimes it's an
incentive to do more work.

125
00:08:09,526 --> 00:08:12,266
Because the more work you do the
more money the company makes.

126
00:08:12,736 --> 00:08:15,706
In this model the NASA investment is fixed.

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00:08:16,286 --> 00:08:20,356
And we meter out that investment
as the companies make progress.

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00:08:20,356 --> 00:08:23,806
So we have these progress milestones,
we'll call them funding milestones.

129
00:08:24,116 --> 00:08:29,006
They're usually tied to some key development
effort for the partner and when we see

130
00:08:29,006 --> 00:08:32,896
that they've completed that performance
milestone then they'll get some additional

131
00:08:32,896 --> 00:08:34,316
funding from NASA.

132
00:08:34,566 --> 00:08:37,886
And so it's kind of like
breadcrumbs along a trail.

133
00:08:37,886 --> 00:08:39,946
And so as they make progress along that trail

134
00:08:39,946 --> 00:08:44,156
of development then we continue
our financial investment

135
00:08:44,266 --> 00:08:46,536
and we continue our technical assistance.

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00:08:47,266 --> 00:08:50,716
Likewise in this model if the company
is having a hard time performing

137
00:08:50,716 --> 00:08:56,196
for whatever reason it might be then those are
also off-ramps for NASA as well to go ahead

138
00:08:56,196 --> 00:09:01,556
and end the agreement if it ends up that we

can't get things straightened out and then take

139
00:09:01,556 --> 00:09:07,076
that opportunity to find another partner that
we can we can help with their development.

140
00:09:08,026 --> 00:09:14,966
So for Sierra Nevada they've, and most all
of our partners have a number of milestones.

141
00:09:14,966 --> 00:09:16,876
They usually occur about
every three or four months.

142
00:09:17,246 --> 00:09:20,426
But of course our NASA people are
really working with them along the way.

143
00:09:20,686 --> 00:09:22,586
There can be many things happening that aren't,

144
00:09:22,976 --> 00:09:25,276
aren't directly related to
a particular milestone.

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00:09:26,146 --> 00:09:29,916
For Sierra Nevada, they are coming up on
their preliminary design review milestone

146
00:09:30,236 --> 00:09:35,276
that will mark significant
progress in the phase of development

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00:09:35,276 --> 00:09:40,046
which we call Commercial Crew
Development Phase 2 or CCDev2.

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00:09:41,166 --> 00:09:44,196
Leading up to this, though, they have
many elements of their development

149
00:09:44,196 --> 00:09:47,166
that are well beyond preliminary design.

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00:09:47,166 --> 00:09:50,026
You, they've got some rocket motor testing.

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00:09:50,026 --> 00:09:51,756
They've got some wind tunnel testing going.

152
00:09:52,286 --> 00:09:54,786
And so they're moving right along.

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00:09:55,146 --> 00:09:59,126
It's probably a good time to talk about what,
what is unique about their program I thought.

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00:09:59,126 --> 00:09:59,946
If that would be appropriate.

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00:09:59,946 --> 00:10:00,136
[Kyle] Oh yeah.

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00:10:00,136 --> 00:10:00,956
That would be great.

157
00:10:02,436 --> 00:10:06,456
[Valin] So I think when people
first see the Sierra Nevada program,

158
00:10:06,606 --> 00:10:11,526
which they call the Dream Chaser program, their
spacecraft looks very much like a space shuttle.

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00:10:11,526 --> 00:10:14,956
Most people, if they didn't
study it real carefully,

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00:10:14,956 --> 00:10:16,506
would think they were looking
at the space shuttle.

161
00:10:17,136 --> 00:10:19,516
It is a lifting body spacecraft, though.

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00:10:19,516 --> 00:10:24,036
It doesn't have wings like the space shuttle,
at least the wings in a proper technical sense.

163
00:10:24,036 --> 00:10:25,096
They call them tips ends.

164
00:10:25,586 --> 00:10:29,596
And the reason it's called the lifting
body is because half of the lift

165
00:10:29,596 --> 00:10:32,616
that the spacecraft produces is
actually from the shape of the body

166
00:10:32,616 --> 00:10:36,186
of the spacecraft and not the tips ends.

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00:10:36,846 --> 00:10:40,086
When you compare it to the space
shuttle, you look at this picture here,

168
00:10:40,086 --> 00:10:42,126
that's sitting on the runway
next to the space shuttle;

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00:10:42,436 --> 00:10:44,726
you can see it's quite a bit
smaller than the shuttle.

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00:10:44,726 --> 00:10:48,146
It's only about 30 feet long,
whereas, the shuttle's 120 feet long.

171
00:10:48,736 --> 00:10:51,286
You know, space shuttle is
dominated by its big cargo bay.

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00:10:51,626 --> 00:10:56,226
The Dream Chaser spacecraft is
dedicated to crew transport.

173
00:10:56,226 --> 00:10:57,126
It focuses on that.

174
00:10:57,126 --> 00:10:58,726
It can fly up to seven astronauts.

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00:10:59,176 --> 00:11:03,216
The plan of course to fly to the space station
and to serve other markets into low-Earth orbit.

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00:11:04,466 --> 00:11:09,316
And so the other departure from
the space shuttle approach is

177
00:11:09,316 --> 00:11:11,226
that it will launch on an expendable booster.

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00:11:11,686 --> 00:11:14,376
The Dream Chaser's plan is
to launch on an Atlas-V.

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00:11:14,756 --> 00:11:17,866
The Atlas-V is pretty much
America's main heritage booster.

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00:11:17,866 --> 00:11:19,466
It dates back over 50 years.

181
00:11:19,466 --> 00:11:22,716
This is the latest incarnation after

all those years of improvement.

182
00:11:22,956 --> 00:11:26,026
Has an incredible record
of reliability and safety.

183
00:11:26,026 --> 00:11:30,906
We're so comfortable with that rocket we
put our multibillion-dollar science payloads

184
00:11:30,906 --> 00:11:32,886
on it without any hesitation.

185
00:11:33,476 --> 00:11:37,546
And so the Dream Chaser program
launches on this Atlas-V vehicle.

186
00:11:37,546 --> 00:11:41,006
It could fly up to seven
crew up to the space station.

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00:11:41,006 --> 00:11:44,116
And then of course the other feature, what
you have when you have a flying vehicle

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00:11:44,116 --> 00:11:47,336
like this instead of the capsule, of
course is, is it lands on a runway

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00:11:47,916 --> 00:11:55,186
and so that makes the reusability aspects
much, much more attractive or at least easier

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00:11:55,186 --> 00:11:59,566
to overcome than putting a capsule in the
seawater with the corrosion that you tend

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00:11:59,566 --> 00:12:02,796
to have and dealing with that
for a reusable spacecraft.

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00:12:03,506 --> 00:12:08,726
The other feature that distinguishes the Dream Chaser program is it's based on non-toxic,

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00:12:09,206 --> 00:12:14,166
kind of a green propellant technology,
both for the main propulsion motors

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00:12:14,166 --> 00:12:17,476
which are hybrid propulsion motors
as well as for the reaction,

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00:12:17,636 --> 00:12:19,916
excuse me, reaction control system jets.

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00:12:20,516 --> 00:12:25,196
The advantage you have then, is that you really could fly the Dream Chaser spacecraft back

197
00:12:25,196 --> 00:12:30,256
into almost any airport as long as it
has a runway about 7,500 feet long.

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00:12:30,786 --> 00:12:35,486
With the shuttle, when it lands, we have
the crew that goes out in protective gear

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00:12:35,486 --> 00:12:38,236
to make sure that none of the
toxic propellants are leaking.

200
00:12:38,546 --> 00:12:42,706
Certainly, it would be difficult to take the
shuttle into just the normal civilian airport.

201
00:12:43,196 --> 00:12:47,926
And so one key to commercial spaceflight,
commercial human spaceflight we are trying

202
00:12:47,926 --> 00:12:50,876
to lower cost and improve
safety and reliability.

203
00:12:51,066 --> 00:12:54,266
And getting rid of the toxic
propellants is key to that.

204
00:12:54,266 --> 00:12:57,776
And so the Dream Chaser that's one of the,
one of the features of the program as well.

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00:12:58,676 --> 00:13:03,516
[Kyle] I sense, and I, you know talking
to everybody associated with the program,

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00:13:03,516 --> 00:13:06,466
it being a new program obviously,
Commercial Crew,

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00:13:06,466 --> 00:13:10,486
but I sense a lot of excitement
that surrounds the activity.

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00:13:10,486 --> 00:13:16,606
I even sense it in your description in some
of these pictures that you're talking to.

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00:13:17,376 --> 00:13:22,036
Do you actually sense that where you are with
these company, especially with Sierra but,

210
00:13:22,106 --> 00:13:25,366
you know, all these companies
that are involved in this program?

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00:13:26,076 --> 00:13:28,806
[Valin] I really think there's
a lot of excitement.

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00:13:28,986 --> 00:13:33,216
I think because of the pace of the
development efforts of our commercial partners,

213
00:13:33,526 --> 00:13:36,346
as well as the concepts that they're developing.

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00:13:36,966 --> 00:13:39,476
Certainly me being kind of
an airplane guy at heart.

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00:13:39,476 --> 00:13:41,616
The flying vehicle appeals to me.

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00:13:41,986 --> 00:13:46,886
It's also certainly appealing from a
commercial aspect and that you can land

217
00:13:46,886 --> 00:13:50,506
on runways because you can fly on entry.

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00:13:50,506 --> 00:13:53,136
You can fly left and right out
of the orbit plane pretty far.

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00:13:53,136 --> 00:13:54,226
We call that cross-range.

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00:13:54,226 --> 00:13:56,716
And so every orbit you have a
number of landing opportunities.

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00:13:57,206 --> 00:14:02,576
Also, with a lifting body, or a high LRD
spacecraft, the acceleration or g-environment

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00:14:02,576 --> 00:14:04,676
through the flight phase is relatively low.

223
00:14:05,076 --> 00:14:09,066
So when you start wanting to fly
nonprofessional astronauts that aren't

224
00:14:09,066 --> 00:14:14,316
in peak physical condition
you have a vehicle that is,

225
00:14:14,316 --> 00:14:18,596
provides a more tolerable environment for,
kind of, normal people to fly to space.

226
00:14:19,486 --> 00:14:24,806
And of course, also when you have of an
airplane-type spacecraft that lands on runways

227
00:14:25,296 --> 00:14:28,876
and the development effort that goes with
that it's a bit harder than doing a capsule.

228
00:14:29,326 --> 00:14:33,486
But once you conquer those challenges you end up
with some features that are pretty attractive.

229
00:14:33,986 --> 00:14:37,476
And along those lines even
through development as far as some

230
00:14:37,476 --> 00:14:39,576
of the activities that are coming up.

231
00:14:39,576 --> 00:14:45,846
You can see a picture here of the Dream Chaser
engineering test article in construction.

232
00:14:46,256 --> 00:14:50,486
It looks black because its
carbon-fiber-epoxy composite construction.

233

00:14:50,666 --> 00:14:54,806
It's hard to recognize somewhat cause the tips
ends aren't on yet in this recent picture.

234
00:14:55,516 --> 00:15:00,786
The idea is that in a number of weeks
here this vehicle will be nearly complete.

235
00:15:00,786 --> 00:15:02,806
It will actually be taken out to Mojave.

236
00:15:03,006 --> 00:15:08,566
It will be flown up to altitude on the
Dream Chaser, excuse me, the White Knight-2.

237
00:15:08,566 --> 00:15:12,406
That's a scale composite of Virgin
Galactic Light Knight-2 planned

238
00:15:12,406 --> 00:15:14,266
for the suborbital tourism flights.

239
00:15:14,896 --> 00:15:19,456
Just this April and May we'll be
doing some captive-carry flights

240
00:15:19,616 --> 00:15:24,236
with this engineering test article to make
sure that the two vehicles are compatible.

241
00:15:24,656 --> 00:15:27,166
Then that vehicle will be
brought back here to Colorado

242
00:15:27,496 --> 00:15:30,816
where all the subsystems will be
outfitted for approach and landing tests

243
00:15:30,816 --> 00:15:32,266
that will happen later this year.

244
00:15:32,636 --> 00:15:34,376
So we'll go back out to California.

245
00:15:34,696 --> 00:15:38,886
They will go through some more testing
and it will be taken up to altitude.

246
00:15:39,286 --> 00:15:44,806
It'll be released from the White Knight-2
and it will descend and fly very much,

247
00:15:44,806 --> 00:15:51,506
very shuttle-like looking
descent and landing at the Dryden,

248
00:15:51,506 --> 00:15:53,776
Edwards Flight Facility in California.

249
00:15:53,826 --> 00:15:55,406
So it will be a number of those tests.

250
00:15:55,406 --> 00:15:59,466
And in fact, one of those is actually a,
one of our funding, funding milestone.

251
00:15:59,986 --> 00:16:03,646
Also that captive-carry flight I talked about
is one of the funding milestones as well.

252
00:16:03,866 --> 00:16:06,366
So those are some of the
exciting things happening

253
00:16:06,366 --> 00:16:09,426
in the Dream Chaser program
development schedule for this year.

254
00:16:09,766 --> 00:16:14,476

[Kyle] That's a real fast-paced
schedule the way you've laid that out

255
00:16:14,476 --> 00:16:21,246
and I know what everybody really gets excited
hearing updates about what's going on especially

256
00:16:21,246 --> 00:16:23,636
with Commercial Crew Program as it ramps up.

257
00:16:23,636 --> 00:16:30,466
And this has been a great overview and
we really appreciate you taking the time

258
00:16:30,466 --> 00:16:36,026
to walk us through, you know, what you're
doing with them and what Sierra Nevada is doing

259
00:16:36,026 --> 00:16:38,146
in support of the Commercial Crew Program.

260
00:16:38,146 --> 00:16:41,466
So we really appreciate to
taking time out to visit with us.

261
00:16:42,236 --> 00:16:42,796
[Valin] Well thank you Kyle.

262
00:16:42,796 --> 00:16:46,326
I really enjoyed it and I think
with the right funding within four

263
00:16:46,326 --> 00:16:49,556
to five years we'll see the Dream
Chaser flying up to the space station

264
00:16:50,016 --> 00:16:54,396
and providing routine crew transport
for the astronauts and scientists.

265
00:16:54,566 --> 00:16:55,186
It'll be great.

266
00:16:55,516 --> 00:16:55,756
[Kyle] Yep.

267
00:16:55,756 --> 00:16:56,576
Well thanks again.